

REMARKS/ARGUMENTS

Applicants have carefully reviewed the Examiner's Advisory Action dated April 18, 2005, which declares claims 1-5 and 11 as being allowed and claims 6-10 as being rejected.

A telephone interview was conducted by Peter K. Paik having Registration No. 54356 and being affiliated with First Law Offices of Korea with the Examiner on April 28, 2005 at 9:45 am. The gist of the discussion was on whether Claim 10 would be allowable.

To recap the prosecution history, in the first OA, the Examiner issued a conditional allowance for Claim 10 which depended from Claim 8. Claim 8 depended from Claim 6 which was an independent claim. Examiner requested that Claim 10 be amended to include all the limitations of Claims 6 and 8 to be allowed. As per the Examiner's instruction, Claim 10 was amended initially. However, some elements were inadvertently omitted when the three claims were combined. Due to the clerical error, an incomplete Claim 10 without some elements of Claim 6 was filed. In the final OA, the Examiner cited a new reference to reject the Claim 10. Despite an effort by the Applicant to bring Examiner's attention to this clerical error, an advisory action was issued notwithstanding newly amended Claim 10 filed after the final OA as the Examiner had asked for.

During the interview, the Applicant respectfully asked for an allowance of Claim 10 after explaining the above situation. The Examiner maintained his rejection of Claim 10 because the cited reference in the final OA might still be useful to reject claim 10 under §103. However, since this raised a new issue, the Examiner offered to reconsider allowance of Claim 10 if Applicant properly overcomes his anticipated rejection grounds under §103.

Finally, the Examiner proposed three options as follow up work: 1) canceling Claim 10; 2) filing an RCE; 3) overcoming the cited reference (in the final OA) provided it is a proper reference over Claim 10.

By the foregoing, claims 6-9 were canceled, and claim 10 was rewritten to include all of the limitations of the base claim and intervening claims.

Rejection under 35 U.S.C. 103 by Kamasz et al. (U.S. 5,585,652) and Anagnostopoulos (U.S. 4,490,036)

The provisional rejection of claim 10 under 35 U.S.C. 103 by Kamasz and Anagnostopoulos has been carefully considered but is most respectfully traversed.

Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP §2143. This section states that to establish a prima facie case of obviousness, three basic criteria must be met initially. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Further, MPEP §2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

This rejection is respectfully traversed on the grounds that a prima facie case of obviousness of the amended claims has not been established.

The present invention, as defined in claim 10, is directed to a solid state imaging device for use in a solid state imaging apparatus wherein said solid state imaging apparatus includes a light emitting means, the device comprising: means for receiving an incident light to thereby generate charges, the receiving means having one or more photoelectric conversion elements; first accumulation means, in response to a first control signal, for accumulating the charges generated from each of the photoelectric conversion elements, the first accumulation means having one or more charge accumulation devices; second accumulation means, in response to a second control signal, for accumulating the received charges generated from each of the photoelectric conversion elements, the second accumulation means having one or more charge accumulation devices; first transfer means for transferring the charges accumulated in the first charge accumulation means in a serial sequence as a first charge signal; second transfer means for transferring charges accumulated in the

second charge accumulation means in a serial sequence as a second charge signal; control means for outputting the first control signal or the second control signal to select the first or the second charge accumulation means, thereby allowing the charges to be accumulated in the first or the second charge accumulation means, respectively; and means for calculating a difference between the first charge signal and the second charge signal to thereby output a differential signal in sequence, wherein said light emitting means is operated either in an on-state or in an off-state thereof; and said control means outputs the first control signal and the second control signal during the on-state and the off-state of said light emitting means, respectively, and wherein the first accumulation means additionally accumulates charges obtained during a continued on-state of the light emitting means and then transfers the obtained charges. By virtue of the additional accumulation of the charges obtained during the continued on-state of the light emitting means and the afterward transfer, the effect of noise can be diminished considerably in accordance with the present invention.

Kamasz fails to disclose or imply the first accumulation means that additionally accumulates charges obtained during a continued on-state of the light emitting means and then transfers the obtained charges. In contrast, in accordance with Kamasz, a storage device 216 is employed as an accumulation means, and the time signal separates the second frame of photo-charges from the first one. Therefore, as shown in Figs. 3A to 3G, the signal reading step must be executed simultaneously with the accumulation step. As a result, during a continued on-state of the light emitting means, it cannot additionally collect the signal charges of the continued on-state.

Further, Anagnostopoulos neither discloses nor implies the first accumulation means that additionally accumulates charges obtained during a continued on-state of the light emitting means and then transfers the obtained charges, and therefore, cannot acquire the above-described advantage.

The invention of Anagnostopoulos is directed to a rangefinder device that subtracts background from an image by using paired analog shift registers; senses the location of an object in the image; and determines the distance to the object. With reference to the Figs. 2 and 5, and the col. 2 lines 45-60 in the specification of Anagnostopoulos, the device includes a pair of analog shift registers prepared for an array of photosensors, wherein one of the shift registers receives and transfers photo signals generated by the array of photosensors when a light beam is turned on, whereas the other of the shift registers receives and transfers for the photo signals generated by the array of photosensors when the light beam is turned off.

The Official Action relates the photo charges generated during the time duration " $T1/\Phi1-4$ " to the first accumulation means of the present invention, and relates the photo charges generated during the time duration " $T2/\Phi1-4$ " to the second accumulation means of the present invention. However, with reference to col. 5, line 55 – col. 6, line 11 in the specification of Anagnostopoulos, it is apparent that the generation and accumulation of the charges take place in only the photosensor array during the time delay $\tau1$ and $\tau2$, and that the charges thus accumulated in the photosensor array are transferred to a differential means, without any other manipulation. That is, the charges generated during the time duration " $T1/\Phi1-4$ " are accumulated in the photosensor array, and the charges generated during the time duration " $T2/\Phi1-4$ " are accumulated also in the same photosensor array. In other words, there does not exist two accumulation means that correspond to the first

accumulation means and the second accumulation means, respectively, and further, the charges obtained during a continued on-state of the light emitting means are not additionally accumulated in an accumulation means, while the obtained charges are transferred not after the additional accumulation, which means that the charges generated in the photosensor array are output immediately. Accordingly, it cannot diminish the effect of noise considerably, which makes the reference much different from the present invention.

It is respectfully submitted that Examiner's hindsight provisional combination of Kamasz and Anagnostopoulos is entirely improper in the absence of any suggestion, teaching or motivation given in any of the prior art references, and inasmuch as one skilled in the art would have no reason to make such combination.

Furthermore, even assuming, arguendo, that such combination were proper, such combination still cannot render the present invention obvious because neither Nagura nor Leacock discloses or even implies the present invention. Accordingly, even if every single disclosure contained in each of the references is selectively chosen and stacked together against the present invention, such combination cannot possibly suggest to an ordinary person in the art the inventive features of the present invention.

CONCLUSION

Applicants believe that this is a full and complete response to the Office Action. For the reasons discussed above, applicants now respectfully submit that all of the pending claims are in complete condition for allowance. Accordingly, it is respectfully requested that the Examiner's rejections be withdrawn; and that claim 10 be allowed in their present forms. If the Examiner feels that any issues that remain require discussion, he is kindly invited to contact applicant's undersigned attorney to resolve the issues.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all of the claims now present in the application are most respectfully requested. Any fee due with this paper may be charged on Deposit Account 50-1290.

Respectfully submitted,



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